

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 22

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MIROSLAV CHMELIR
and KURT DAHMEN

Appeal No. 2003-0195
Application 09/554,090

HEARD: April 2, 2003

Before GARRIS, WARREN and POTEATE, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner at least twice rejecting claims 13 through 16 and 18 through 31,¹ all of the claims in the application. Claim 24 is illustrative of the claims on appeal:

24. A process for producing a water-soluble or water-swellaable polymer or copolymer comprising, providing an acid monomer or monomers alone, or with a comonomer or comonomers; partially or completely neutralizing said monomer or monomers with a basic nitrogen compound or compounds; free-radical polymerizing said monomer or monomers alone, or with comonomer or comonomers to form said water-soluble or water-swellaable polymer or copolymer; and subsequently heating said water-soluble or water-swellaable polymer or copolymer at a temperature of from 120 to 240°C.

¹ See 37 CFR 1.191(a) (2002). See also the Office action of February 25, 2002 (Paper No. 13).

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**PAT. & T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES**

The appealed claims, as represented by claim 24, are drawn to a process comprising at least partially or completely neutralizing an acid monomer or monomers with a basic nitrogen compound or compounds, free-radical polymerizing the neutralized monomer or monomers alone or with comonomer or comonomers to form a water-soluble or water-swellaible polymer or copolymer, and subsequently heating said water-soluble or water-swellaible polymer or copolymer at a temperature of from 120 to 240°C. According to appellants, the resulting water-soluble or water-swellaible polymer or copolymer has “an exceedingly low content of residual monomers” (specification, pages 1-2).

The references relied on by the examiner are:

Chmelir	4,929,717	May 29, 1990
Anderson	4,954,562	Sep. 4, 1990

The examiner has rejected appealed claims 13 through 16 and 18 through 31 under 35 U.S.C. § 103(a) as being unpatentable over Anderson in view of Chmelir.

Appellants state that the appealed claims “do not stand or fall together” and have presented argument with respect to all of the appealed claims² to which the examiner has responded (answer, pages 9-12). Thus, we decide this appeal based on all of the appealed claims. 37 CFR § 1.192(c)(7) (2002).

We affirm.

² See pages 2 and 4-7 of the brief filed by appellants on May 22, 2002 (Paper No. 14) (hereinafter present brief), which we consider here that incorporates by reference the statements at pages 3 and 5-8 of the brief filed by appellants filed on December 13, 2001 (Paper No. 12) (hereinafter first brief). Indeed, appellants filed the first brief with respect to a ground of rejection that was thereafter withdrawn by the examiner in the Office action of February 25, 2002 (Paper No. 13), and have incorporated a considerable amount of the first brief by reference into the present brief, even changing the import of the separate arguments with respect to the dependent claims stated in whole in the first brief (pages 3 and 5-8) in stating the incorporation with respect thereto in the present brief (pages 4-7). The purpose behind 37 CFR § 1.192 (2002) is the presentation of appellants’ position on each of the enumerated matters in a *single* document. See also Manual of Patent Examining Procedure (MPEP) § 1206 (8th ed., August 2001; 1200-8 – 1200-9). We will not in this instance exercise our authority to remand this application so that appellants can submit a supplemental brief that is complete with respect to their position in compliance with 37 CFR § 1.192 (2002), *see* MPEP § 1212 (8th ed., August 2001; 1200-30 – 1200-31), in view of the result we reach below.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' brief and reply brief for a complete exposition thereof.

Opinion

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the supported position advanced by the examiner (answer, pages 3-5) that, *prima facie*, one of ordinary skill in this art would have found in the combined teachings of Anderson and Chmelir the suggestion that a water-soluble or water-swellaable polymer or copolymer prepared by free-radical polymerization of an acid monomer or monomers partially or completely neutralized with a basic nitrogen compound, can subsequently be heated at a temperature in a range overlapping with the claimed range with the reasonable expectation of drying the water-soluble or water-swellaable polymer as well as eliminating unreacted monomers therefrom.

The dispute in this appeal involves the claim limitation "*subsequently heating* said water-soluble or water-swellaable polymer or copolymer at a temperature of from 120 to 240°C" of appealed claim 24 (emphasis supplied; see reply brief, page 2, present brief, page 3, and answer, pages 4 and 6). We determine that when this limitation is considered in light of the plain language of the other claim limitations and of the written description in the specification as interpreted by one of ordinary skill in this art, *see, e.g., In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000); *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989), the claimed process for producing a water-soluble or water-swellaable polymer or copolymer comprising at least the free-radical polymerizing of an acid monomer or monomers partially or completely neutralizing with a basic nitrogen compound or compounds to form said water-soluble or water-swellaable polymer or copolymer, and then subsequently heating said water-soluble or water-swellaable polymer or copolymer at a temperature of from 120 to 240°C. Consequently, the plain language of appealed claim 24 encompasses processes wherein once a *single* molecule of water-soluble or water-swellaable polymer or copolymer is formed by free-radical polymerization conducted in any manner, it is heated at a temperature within the specified

range for some period of time, no matter how brief. *Cf. Exxon Chemical Patents Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555-58, 35 USPQ2d 1801, 1802-05 (Fed. Cir. 1995) (“Consequently, as properly interpreted, Exxon’s claims are to a composition that contains the specified ingredients at any time from the moment at which the ingredients are mixed together.”).

It seems to us that appellants argue that the heating step is conducted only after polymerization ceases (e.g., reply brief, page 2, fifth sentence). We agree to the extent that the language of appealed claim 24 *also* encompasses processes in which heating is conducted after polymerization is no longer conducted, that is, the polymerization reaction has ceased with respect to a batch process or the polymer recovered with respect to a continuous process, before the polymer so produced is subsequently heated at a temperature within the specified range. Our interpretation in this respect is based on the presence of the transitional term “comprising” which permits appealed claim 24 to include such additional, although unspecified, process steps. *See In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) (“As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term ‘comprises’ permits the *inclusion* of other steps, elements, or materials.”).

Indeed, the written description in appellants’ specification provides for batch and continuous processes, conducted at *low* temperatures “ranging from 0 to 50°C,” after which “the produced polymer is heated at a temperature of 120-240°C” (pages 8-9; *see also, e.g.*, specification Examples 1 and 2 at page 12, lines 6-8 and 22-24). However, it is well settled that limitations in the specification, including those in specification Examples, will not be read into the claim unless there is some basis in the claim to do so, and we find no such basis in appealed claim 24 or any other appealed claim. *See generally, Zletz, supra*. In this respect, compare appealed claim 20, which modifies appealed claim 24 by specifying heating at a temperature of from 140 to 180°C, and appealed claims 28 through 31, which modify the appealed claims on which they depend by specifying that heating is carried out for a time period of at least 10 minutes to 1 or 2 hours.

Appellants do not dispute that the materials, including the neutralized monomers used in the process of Anderson and the water-soluble or water-swellaable polymer or copolymer prepared therefrom, are patentably indistinct from those encompassed by the appealed claims,

stating that “the present invention . . . is a reaction using materials identical to or very close to the materials of Anderson” (reply brief, page 2, fifth sentence; emphasis in original deleted; see also present brief, page 4).

We have carefully compared the combined teachings of Anderson and Chmelir to the claimed processes encompassed by the appealed claims as we have interpreted them above. We find that Anderson teaches the preparation of water absorbent resins in which the exothermic free-radical polymerization reaction of acid monomers that are partially or completely neutralized with, *inter alia*, a basic nitrogen compound, and with comonomers, “is completed within a short period of time, usually in about 30 seconds to about 10 minutes,” and rapidly heats the reaction system “to about 100 to about 130°C. by the heat of polymerization,” thus drying the copolymer “without resorting to any external heating” (col. 11, lines 34-54; see also col. 2, lines 42-46, and col. 4, lines 22-27). In Anderson Examples 1 and 6, the “reaction is completed in about 1 minute [and] [t]he maximum temperature of the mixture during the reaction is about 120° C.” (col. 16, lines 29-31, and col. 17, lines 63-65). In Anderson Examples 19 to 22, the “polymerization is completed in about 30 seconds [and] [t]he maximum temperature of the mixture during the reaction is 130° to 135° C.” (col. 19, lines 23-25).

Based on this substantial evidence, we determine that Anderson would have taught one of ordinary skill in this art that heating of the reaction mixture containing formed polymers begins when polymerization commences, that is, with the formation of a polymer, continues after polymerization ceases and results in drying the obtained polymers.³

We find that Chmelir, in discussing the state of the art of removing undesired monomers from water-soluble and water-swellaable polymers, acknowledges that it was known that “monomers are directly eliminated from a polyacrylamide gel in accordance with U.S. Pat. No. 4,132,884 by heating it to 80° to 150° C.” (col. 1, e.g., lines 8-34). The cited United States

³ It is well settled that a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom, see *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968), presuming skill on the part of this person. *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

Patent is not of record in this appeal.⁴ However, we are of the opinion that this disclosure in Chmelir is evidence that heating polymers in the stated temperature range for the purpose of removing undesired monomers was known in this art at least to the extent of the characterization of the process of the United States Patent by Chmelir.

We further find that Chmelir would have disclosed to one of ordinary skill in this art that a polymer gel, which can be in solution, and which contains undesired monomers that have been treated, that is, neutralized, with, *inter alia*, a basic nitrogen compound, can “then [be] treated at an elevated temperature of 50° to 150° C. . . . at which the polymer gel becomes partly or completely dry . . . [and] [t]he treatment lasts 10 to 180 . . . minutes,” in order to remove the undesired monomer (col. 2, lines 20-41, and col. 2, line 60, to col. 3 line 5; *see also* Chmelir Examples).

We are of the view that while the process of Chmelir differs from the claimed process only in treating the undesired monomers with a basic nitrogen compound subsequent to the completion of the polymerization step rather than prior to the polymerization step, the reference nonetheless would have demonstrated to one of ordinary skill in this art that it was known to heat a polymer mixture containing the so treated monomers to a temperature in a range overlapping with the claimed range in order to expel the so treated monomer. Indeed, it reasonably appears to us that in similar manner to Chmelir, the *unreacted* monomers partially or completely neutralized with a basic nitrogen compound in the process of Anderson and in the claimed process would be present in that form in the polymer reaction mixture when it is subsequently heated in Anderson and in the claimed process.

Based on this substantial evidence, we agree with the examiner that, *prima facie*, one of ordinary skill in this art routinely following the combined teachings of Anderson and Chmelir would have reasonably arrived at a process wherein water-soluble or water-swellaable polymers or copolymers prepared by free-radical polymerization of an acid monomer or monomers partially or completely neutralized with a basic nitrogen compound, can subsequently be heated at a temperature of 50 to 150°C in the reasonable expectation of drying the water-soluble or

⁴ We leave it to the examiner to obtain and consider the cited United States Patent.

water-swellaable polymer as well as eliminating unreacted neutralized monomers therefrom. Indeed, we are reinforced in our view by the fact that both Anderson and Chmelir heats a reaction mixture that contains nitrogen base neutralized monomers subsequent to the polymerization reaction. Accordingly, one of ordinary skill in this art would have reasonably arrived at the claimed process encompassed by appealed claim 24, without recourse to appellants' specification. *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the claimed process] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. [Citations omitted] Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure."); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art.").

We recognize that the temperature range taught by the combined disclosures of Anderson and Chmelir overlaps with the temperature range of from 120 to 240°C in appealed claim 24 and with the temperature range of 140 to 180°C in appealed claim 20. Thus, the burden shifts to appellants to establish that the temperature range of the claimed process achieves a new or unexpected result with respect to the combined teachings of the applied references. *See In re Woodruff*, 919 F.2d 1575, 1577-78, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and cases cited therein. In this respect, we noted above Anderson Examples 1 and 6 in which the temperature "is about 120° C." and Anderson Examples 19 to 22 in which the temperature is "130° to 135° C.," which temperatures fall within the claimed range of appealed claim 24, while the temperature of the latter examples is close to the temperature range of appealed claim 20. It reasonably appears that the process of these Anderson Examples is identical or substantially identical to processes

encompassed by at least appealed claim 24 as we have interpreted this claim above.⁵ To the extent that the Anderson Examples anticipate the claimed processes encompassed by at least appealed claim 24, the case of obviousness is irrebuttable. *In re Fracalossi*, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982).

With respect to the remaining appealed claims, we agree with the examiner that the same are drawn to modifications within the combined teachings of Anderson and Chmelir (answer, pages 9-12). We point out with respect to appealed claims 21 through 23 that the references teach the desirability of reducing the residual monomer content of the water-soluble or water-swallowable polymers or copolymers, and thus one of ordinary skill in this art would have been motivated to reduce the amount of such impurities to a desired workable or optimum extent. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (“[W]here general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”). With respect to appealed claims 28 through 31, the treatment time overlaps with the process time taught by Anderson and the treatment time taught by Chmelir, and thus the burden shifts to appellants to establish that the claimed range achieves a new or unexpected result. *See Woodruff, supra; Aller, supra.*

Accordingly, since a *prima facie* case of obviousness has been established over the combined teachings of Anderson and Chmelir, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants’ arguments in the present brief and reply brief. *See generally, In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

We have carefully considered all of appellants’ arguments. We cannot agree with appellants that Anderson teaches away from the separate heating step of appealed claim 24 as we have interpreted this claim above, and is not combinable with Chmelir (present brief, pages 3-4;

⁵ We decline to exercise our authority under 37 CFR § 1.196(b) (2003) and enter on the record a new ground of rejection of at least appealed claim 24 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over Anderson alone, leaving it to the examiner to make factual findings from the teachings of Examples 1, 6 and 19 to 22 of the reference in this respect in light of our discussion above.

reply brief, pages 3-4) because *each* of Anderson and Chmelir clearly teaches heating a mixture of polymer and residual neutralized acid monomer *after polymerization* as we discuss⁶ above. While appellants essentially point out that exothermic heat is applied in Anderson (present brief, e.g., pages 3 and 4), we agree with the examiner that “[a]fter all . . . heat is . . . heat” regardless of source (answer, page 7).

Appellants further submit that one of ordinary skill in the art would not have used the drying step of Chmelir in the process of Anderson to dry the prepared polymers because Anderson “does not demonstrate a need to do so” (present brief, page 4; reply brief, pages 2-3). We found above that Anderson would have taught one of ordinary skill in this art that the use of exothermic heat to dry the polymer avoids the use of external heat for this purpose. However, we are of the opinion that one of ordinary skill in this art would also have recognized from the process of the United States Patent as characterized by Chmelir and from the process taught by this reference that external heat can be applied in the disclosed ranges to not only dry the polymer but to remove residual neutralized monomer therefrom. Thus, we determine that this person would have reasonably employed external heat in addition to the exothermic heat in the process of Anderson to achieve the benefits of drying and removal of residual neutralized monomers as suggested by Chmelir. *See Dow. Chem., supra; Keller, supra.*

We have also considered appellants’ separate arguments with respect to the remaining appealed claims (present brief, pages 4-7; *see above* note 2). We agree with the examiner (answer, page 12) that the arguments are merely conclusory, and indeed, can be considered to lack the specificity required by 37 CFR § 1.192(c)(7) and (8) (2002). We note in this respect that there is no argument in either the present brief or in the reply brief which addresses the specific portions of the applied references cited by the examiner which we found above to make out a

⁶ *Cf. In re Gurley*, 27 F.3d 551, 552-53, 31 USPQ2d 1130, 1131-32 (Fed. Cir. 1994) (“A reference may be said to teach away when a person of ordinary skill, upon reading the reference would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will of course depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant. [Citations omitted.]”).

prima facie case of obviousness in each instance, thus shifting the burden to appellants to submit argument or evidence in rebuttal. We will not presume appellants' case for non-obviousness. *Cf. In re Baxter Travenol Labs.*, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art.").

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Anderson and Chmelir with appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 13 through 16 and 18 through 31 would have been obvious as a matter of law under 35 U.S.C. § 103(a).


The examiner's decision is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Bradley R. Harris
BRADLEY R. HARRIS

BRADLEY R. GARRIS
Administrative Patent Judge


CHARLES E. WARREN

CHARLES F. WARREN
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Linda R. Potate

LINDA R. POTEATE
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